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Health and nursing problems of elderly patients related to bio-psycho-social need deficiencies and functional assessment

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ABSTRACT

Elderly population is characterized by larger need for social welfare and medical treatment than other age groups. Along with aging, there is a number of emerging health, nursing, caring, psychological and social problems. Complexity of these problems results from overlapping and advancing involuntional changes, multi-illness, decreased functional efficiency and other factors. The aim of the study was the assessment of health problems in geriatric patients as well as bio-psycho-social need deficiencies in a view of selected parameters of functional efficiency. The research group consisted of the Chair and Clinic of Geriatrics, 186 women and 114 men, 300 persons in total. The research was carried out using a diagnostic poll method with the application of the Activities of Daily Living (ADL) questionnaire of assessment of daily efficiency on the basis of the Katz Scale; the Care Dependency Scale (CDS) questionnaire used to measure the level of the care dependency and human needs, Norton's bed sores risk assessment scale, the Nursing Care Category (NCC) questionnaire applied to assess the need for nursing care. In most patients the results unveiled manifestations of three or more illnesses. Functional efficiency was at low and average level. Half of the subjects were endangered by risk of bed sores as well as showed high need fulfillment deficiency. The highest level of the deficiency was observed in patients in the eldest age group as well as suffering from multi-illness. Material status, education, place of residence or gender showed no significant influence on the level of need fulfillment.

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1. Introduction

Second half of the 20th century was the period of remarkable changes in the population structure in Poland and around the world. Demographic forecasts foresee the continuous increase of old age population (Roszkiewicz, 2006). Human aging is influenced natural process of decreasing biological activity of the organism in which vital role is determined by genetical and environmental factors. As time passes by human organism undergoes changes in structure and functioning of organs and systems (Abrams et al., 1999; Grodzicki et al., 2006). WHO classification takes the age of 60–74 as elderly age, this is early old age, and period of 75–89 as the late old age, the old age period. Persons who live to be over 90 enter hoary age. While aging advances and old age period begins health, nursing, care, psychological, social, economical and other problems start emerging. Elderly age population is characterized by larger than in other groups need for social and medical help. The complexity of these problems results from overlapping and advancing involuntional

changes, multi-illness, and decrease in functional efficiency, emerging nursing problems as well as worsening of material status and other factors (Abrams et al., 1999; Grodzicki et al., 2006). Solution for these problems requires multi-directional approach and organizing help for elderly. The main priority of geriatric help in Poland and around the world is undertaking actions aimed at maintaining life independency of this age population. Indeed, a very important task is early diagnosis of factors influencing decrease and halting independency by including the elderly into programs promoting prophylaxis, health, cause treatment, and rehabilitation. Geriatric standard around the world is introducing Comprehensive Geriatric Assessment into medical practice aiming at overall oversight of the needs of the elderly and planning a framework for Comprehensive Geriatric Care (Derejczyk et al., 2005).

Elderly age comes with gradual limitations in physical fitness and increased vulnerability to chronic diseases. Typical features of geriatric medicine are mainly multi-illness, polypragmasia, lack of typical symptomatology as well as occurrence of “large geriatric problems”. Chronic diseases, so typical of elderly, are the processes causing systemic disorders and biological dysfunctions, which often influence mental health and social life of an individual (Abrams et al., 1999; Grodzicki et al., 2006).

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In developed countries there are various organizational forms of care for elderly, the significant element of which are professionally educated nurses. There are also various forms of such health and social care developed in Poland. Due to increasing number of elderly it is important to direct health and social policies of countries to fulfilling needs and solving problems of these people (Derejczyk et al., 2005). It is often underlined that it is most important to solve problems resulting from deficiencies of biological, mental, and social needs of the elderly. What is stressed here, are the needs of affinity, usefulness, and recognition, independence, mental and physical safety as well as life satisfaction (Kocowski, 1982). Problems of the elderly should be considered and carried out similarly to the problems of other age groups without diminishing any of them. However changing life situation and social roles may influence their hierarchy. One of the most important tasks in human life is being active in various areas of life. Being active conditions fulfilling other human needs (Kocowski, 1982; Rymaszewska and Szmigiel, 2008). Another important factor is maintaining physical activity until late senile age. Manifesting and maintaining various types of activity is mainly conditioned by state of health, functional efficiency but also financial means. Virginia Henderson defined 14 human needs for nursing based on A. Maslow's theory. In practice, nurses evaluate fulfillment of these needs, working on the basis of nursing process, which stands as a base for nursing practice (Henderson, 1966, 1978). Nurses evaluate health needs, diagnose nursing and caring problems, consider self-caring and self nursing problems, functional efficiency, plan the aims and tasks for nursing, educate patients and their caretakers on caring. They also take care of the health counseling.

The aim of the study was evaluation of health needs as well as bio-psycho-social deficiencies in geriatric patients against some of the functional efficiency parameters.

In order to achieve it, the following study questions were formulated: (1) What health problems are manifested in the study group? (2) What is the functional efficiency of the study group against ADL questionnaire? (3) What types of care are being performed among the studied patients against CNC? (4) What is the level of bio-psycho-social need fulfillment against CDS questionnaire? (5) What medical and socio-demographical factors influence the level of need fulfillment?

2. Subjects and methods

2.1. Population and setting

The study included patients aged 60+. The study group comprised 300 persons, 186 women and 114 men, treated at the Chair and Clinic of Geriatrics of Collegium Medicum in Bydgoszcz in 2009/2010. The mean age of patients was 77.3 years. Of them, 120 patients aged 60–74 (40.8%), 156 individuals were of 75–89 years (56%) of the total and there were only 24 persons over 90 years, 8% of the whole. Most of the patients lived in the city, and only 15.4% in the country. Within the group, only 7.3% had higher education, 18.0% secondary education, 26.3% elementary education and 35.7% had technical preparations. Most of the patients evaluated their material status as good (71.7%), 19.6% as average, and 2.3% as bad. As to marital status following demographical ratio was noted: 110 (36.7%) were married, 182 (60.7%) were widowed, and 8 (2.7%) declared their marital status as free (not married).

2.2. Measurements and procedure

The research was carried out using a diagnostic poll method with application of ADL and CDS. In this study, we took advantage of the ADL questionnaire, a tool that allows us to determine physical capability, and is often used in geriatrics (Abrams et al., 1999; Grodzicki et al., 2006).

Additionally the health state of patients was evaluated with Norton's bedsores risk assessment scale, as well as Nursing Care Category for nursing care.

2.2.1. The ADL scale

The ADL scale assesses 6 daily living functions: bathing, getting (un)dressed, physiological needs, continence, eating and drinking, and mobility. Finally the score results are summarized in 3 categories: High independence: 4.5–6.0 points, where

the patients are almost independent of nursing care (6 points) or they are only dependent to a limited extent in nursing care. Medium independence 2.5–4.0 points, where the patients are partially dependent on nursing care. Low level of independence: 2.5 points and lower, indicating that the patients in this group are completely dependent on nursing care. It consists of 6 items each of which has 3 criteria relating to the aspect of dependency being graded, as follows: 1 point, almost independent on nursing care; 0.5 point, partially dependent on nursing care; and 0 point, completely dependent on nursing care.

2.2.2. The CDS questionnaire

The CDS measures 15 human needs, with each need having an item description and 5 dependency criteria. Patients or nurses are able to rate each item by selecting which criteria fits best for each human need. In practice, the CDS is intended to be used in the first stage of the assessment process as a case finding and needs assessment tool. The 15-item scale measures a person's care dependency with regard to eating and drinking, continence, body posture, mobility, day and night patterns, getting dressed and undressed, body temperature, hygiene, danger avoidance, communication, contact with others, sense of rules and values, daily activities, recreational activities, and learning abilities. Each item has a brief description, and every criterion is explained in the CDS instruction guide. CDS include 5-point Likert scale from completely dependent to completely independent. Accordingly, values between 15 and 75 points can be obtained; the smaller the value, the more the patient depends on others for care (Dijkstra, 1998). The CDS items have proven to be related to what Henderson calls fundamental human needs that appear in every patient–nurse relationship, independent from cultural background (Henderson, 1966). CDS is the standardized tool and has been localized and validated in many countries (Dijkstra et al., 1999, 2000a,b, 2003, 2010).

2.2.3. The Norton scale

Norton's bed sores risk assessment scale is a standard used for all patients of the Chair and Clinic of Geriatrics. It includes following items: physical state, state of awareness, ability to walk, level of independence while changing position in bed as well as constrictor functioning. A patient is evaluated in 1–4 point scale in each category. The total number of points is 20, minimal is 5 and 14 points and less means high risk of bed sores whereas 14 plus means lack of risk.

2.2.4. The NCC-questionnaire

NCC questionnaire includes 5 basic determinants of care: mobility, hygienic activities, feeding, excretion, and the scope of patient's observation. There are 4 categories of care: I minimal, II moderate, III increased, IV intensive. Every studied patient was qualified for the correct Nursing Care Category.

2.3. Procedure and ethical considerations

Permission to use the CDS questionnaire was given by Professor Ate Dijkstra. The permission to do this research was given by the Bio-Ethical Committee at the university on the condition: (i) the patients have been chosen randomly. (ii) The patients have given their written consent for this research. (iii) The research was voluntary. (iv) All research subjects were anonymous. (v) All the patients received an oral invitation to participate in this research.

2.4. Statistical analysis

The following methods of statistical analysis for countable data were used: the following methods of statistical analysis for countable data were used: (i) basic descriptive statistics providing basic information such as the mean, minimum and maximum values, different measures of variation, (ii) the χ^2 test – a method that performs a hypothesis test to determine whether or not to reject the notion that two variables are independent. (i) Basic descriptive statistics providing basic information such as the mean, minimum and maximum values, different measures of variation, (ii) the χ^2 -test – a method that performs a hypothesis test to determine whether or not to reject the notion that two variables are independent. (iii) C. Cramer's coefficient to determine the strength of correlation. (iv) Student's *t* test to calculate the confidence level for mean. (iv) Student's *t* test to calculate the confidence level for mean. Level of significance $p < 0.05$ was used. Level of significance $p < 0.05$ was used. The statistical program: STATISTICA Data Miner + SAL 9 was used for calculations. STATISTICA Data Miner + SAL 9 was used for calculations.

3. Results

3.1. Outcomes of the statistical analysis

In most of patients there were three or more illnesses observed, which points at multi-illness. Table 1 shows the structure of health problems observed in the studied group (driving question 1) (Table 1). There were following illnesses: arterial hypertension, ischemia,

Table 1
Health problems in the studied group according to systems.

Diseases	n (%) of respondents
Diseases of circulatory system	18 (6.0)
Diseases of respiratory system	29 (9.7)
Diseases of digestive system	11 (3.7)
Diseases of skeletal system	9 (3.0)
Diseases of urinary system	4 (1.3)
A lot of diseases	229 (76.3)

Table 2
Results of ADL scores in the study group.

ADL score classes	n (%) of respondents
High: 6.0–4.5	113 (39.7)
Medium: 4.5–2.5	92 (30.7)
Low: 2.5 or lower	95 (31.7)
Total	300 (100)

circulatory insufficiency, chronic obstructive pulmonary disease (COPD), pneumonia and bronchitis, degenerative joint diseases, post-fracture states, constrictor functioning disorders, anemia, dehydration, cognitive disorders, diabetes, tumor diseases, and others. Most of the patients were admitted in emergency state – 87.6% of cases. Multi-illness often manifested in elderly patients causes a problem with their classification and analysis.

ADL questionnaire survey enriched knowledge concerning functional efficiency, which in the studied group was average and low 62.4%. Remaining subjects gained high result in the scale (driving question 2) (Table 2).

Most of the patients required moderate, increased, and intensive nursing care (79.6%) (driving question 3) (Table 3).

Among the patients there were 151 (50.3%) individuals who gained 14 and less points in Norton's scale, and 149 (49.7%) had 14 and more points.

The average CDS sum-scores achieved by the patients was 50, including 49.3 in men, and 51.1 in women. 109 patients (36.3%) were fully dependent on nursing care, 75 subjects (25%) were partly dependent, and remaining 116 (38.7%) were almost independent in fulfilling their needs. Higher CDS sum-scores (56.7) was observed in patients with single disease units whereas patients with multisystem diseases manifested significantly lower result of 48 ($p < 0.05$). The answer to the driving question 4 was presented in Table 4.

3.2. The main findings

Fig. 1 shows age and need fulfillment level correlation. Higher deficiency level was observed in the oldest group of patients, however, the youngest age group did not achieve maximum result (driving question 5) (Fig. 1).

Another observation was the relationship between bed sores risk and need fulfillment level. Patients endangered by bed sores got 35–40 points in CDS scale (driving question 5) (Fig. 2).

Table 3
NCC and CDSSUM in the study group.

NCC	CDSSUM n(%)	Mean \pm S.D.
I	61 (20.3)	70 \pm 4.7
II	103 (34.3)	57.4 \pm 10.1
III	94 (31.3)	40.2 \pm 13.7
IV	42 (14.0)	25 \pm 11
Total	300 (100)	50 \pm 18.2

Table 4
The items of CDS for the study group ($n = 300$).

Items of CDS	Mean \pm S.D.
1. Eating and drinking	3.5 \pm 1.4
2. Incontinence	3.4 \pm 1.6
3. Body posture	3.2 \pm 1.4
4. Mobility	2.7 \pm 1.5
5. Day/night pattern	3.7 \pm 1.4
6. Getting dressed and undressed	3.2 \pm 1.5
7. Body temperature	3.7 \pm 1.2
8. Hygiene	3.0 \pm 1.5
9. Avoidance of danger	3.2 \pm 1.4
10. Communication	4.1 \pm 1.2
11. Contact with others	3.5 \pm 1.3
12. Sense of rules and values	3.9 \pm 1.4
13. Daily activities	3.1 \pm 1.4
14. Recreational activities	2.6 \pm 1.5
15. Learning ability	3.2 \pm 1.4
CDSSUM-score	50.0 \pm 18.3
Median	53.0
Range	15 – 75

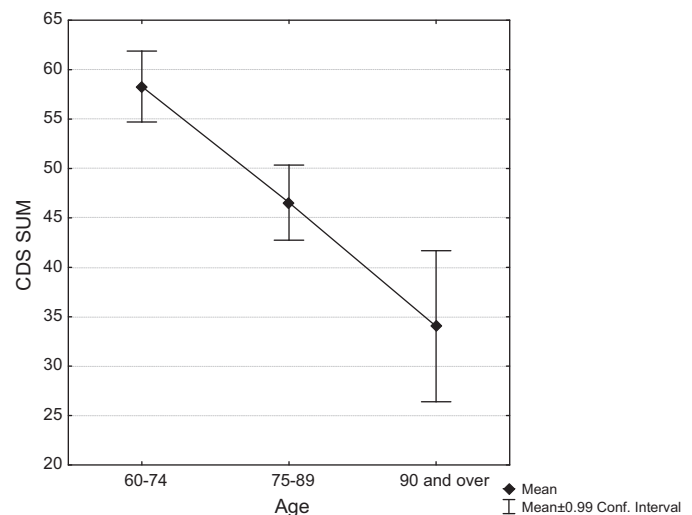


Fig. 1. CDSSUM-score depending on age in the study group.

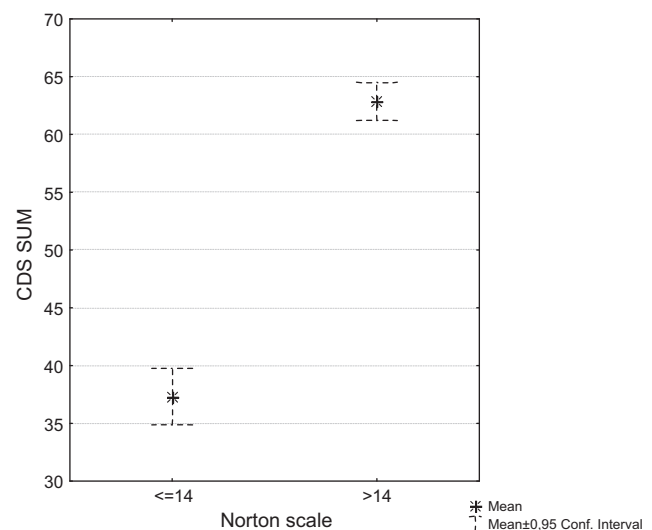


Fig. 2. Correlation between CDSSUM-score and Norton scale results.

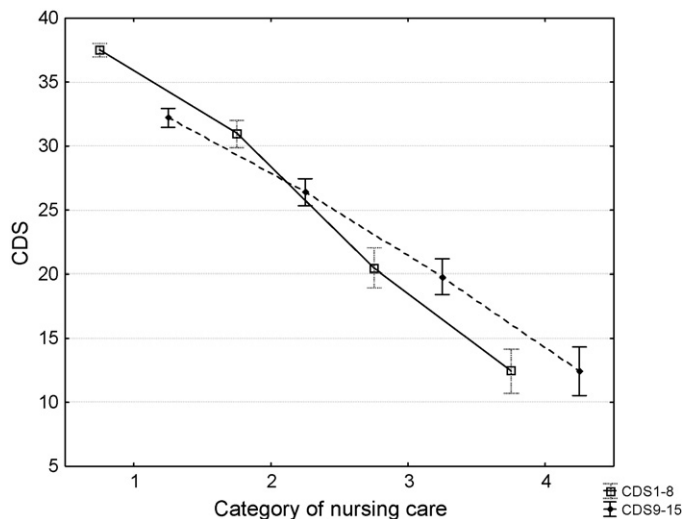


Fig. 3. Correlation between CDSSUM-score and category of nursing care.

The study showed that increased deficiency in fulfillment of biological needs is much faster than fulfillment of psycho-social needs and it is strictly correlated with nursing category (driving question 5) (Fig. 3).

4. Discussion

Nursing of elderly patients is a very difficult job, due to complex health, nursing, and psycho-social problems. A nurse while performing the tasks uses knowledge concerning health promotion, prophylaxis, streamlining, restoring and maintaining functional efficiency as well as elderly person's life quality improvement. Nursing elderly patients aims at improvement in health habits, reduction of losses, complications resulting from illnesses and age, participation in process of diagnosis and treating as well as providing dignity in dying (Maguire, 1985).

The own studies showed that deficiency in need fulfillment of geriatric patients was on the average level, which means that the patients were partly dependent on nursing care. The greatest problems resulted from difficulties with mobility, dressing up, maintaining personal hygiene, daily activities and need for recreation. It was observed that in the studied group the deficiencies in basic human needs tend to turn up faster than psycho-social ones. Own studies showed that material status, education, place of residence or gender did not largely influence the need fulfillment level, however the age of patients was significant. Another observation was correlation between evaluation of bed sores risk and global evaluation of need fulfillment deficiencies. Approximately half of the group was endangered by this risk which was reflected by low results in CDS scale, which means high dependence on nursing care. Particular items of the scale additionally in individual and overall manner show accumulation of deficiencies in fulfillment of various needs connected with susceptibility of the patient to emergence of these complications. The studied group was varied by means of the illnesses. Most patients manifested poly-pathology, which resulted in low levels of functional efficiency. Also Nursing Care Category classification was concurrent with overall CDS sum-score result. All this leads to the conclusion of accurate need fulfillment deficiency evaluation and adequate qualification of patients to the Nursing Care Category.

Earlier studies (Muszalik et al., 2009) conducted on a group of patients treated at a Long Term Care (LTC) as well as boarders of social welfare institution showed significantly higher deficiencies

in need fulfillment of LTC patients and correlation with the age of the patients. The largest deficiencies concerning mobility, maintaining hygiene, dressing up, continence, performing everyday activities, maintaining and learning new abilities were present in patients who underwent long term care. The situation was much better when it comes to the boarders of social welfare institution, who got significantly better overall results in CDS scale similarly to the patients treated at geriatric ward. Similar observations concerning significant influence of age and place of residence on dependence on care were published by Lohrmann. These studies show that in German welfare institutions and hospitals the dependence on nursery care was increasing along with age, but also depended on the type of illness. However, the studied boarders of welfare institutions were fully or significantly dependent on nursery care, but the largest deficiencies were present in maintaining personal hygiene, mobility, avoiding dangers and everyday activities (Lohrmann et al., 2003a,b).

Own studies showed that CDS scale questionnaire is useful in overall evaluation of a patient as a part of initial evaluation and the first stage of diagnosis in a nursing process. CDS scale was validated and adopted for research in several countries (Dijkstra et al., 2003, 2010), so it seems to be reasonable to continue research development in clinical nursing in this field. At present, there is a gap in such research which makes it impossible to make any further comparisons with other professional publications of such studies.

All the problems of elderly and those suffering from chronic illnesses require treating and nursing team to perform activities, which are wholly or partly compensational, supportive and educational, consisting in replacing the patient in performing the tasks, which are impossible for him to perform, helping with some activities and counseling. One of the most significant elements in working with geriatric patient is close cooperation of nurses, doctors, physiatrists, nutritionists, therapists, psychologists, priests, voluntary workers, patients and their families.

5. Conclusions

1. In most patients there occurred multiple complex health problems referred to as poly-pathology, which shaped functional efficiency at low and average level.
2. Most patients were qualified to high categories of nursing care thus partly or fully dependent on this care.
3. Higher deficiency in need fulfillment was observed in patients suffering from multi system disorders, endangered by bed sores and in advanced age. Socio-demographical factors such as material state, education, place of residence or gender did not significantly influence the level of need fulfillment.

Conflict of interest statement

None.

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